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PLATEILEMA PALMERI (ASTERACEAE: HELENIEAE: PLATEILEMINAE): HABITAT INFORMATION AND CHROMOSOME NUMBER FROM A POPULATION IN MEXICO

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ABSTRACT

Observations and label data for a recent collection of *Plateilema palmeri* (A. Gray) Cockerell in Coahuila, Mexico, provided ecological information not previously available for the species, which is known only from a few sites in Coahuila and Nuevo León in northeastern Mexico and in Brewster County, Texas. The collection also resulted in a first chromosome number report, **$2n$ = 13 II**, for *P. palmeri*. *Plateilema palmeri* has not been documented in Texas since 1929.

KEY WORDS: Asteraceae, Helenieae, *Plateilema*, chromosome number, Coahuila, Mexico

Plateilema palmeri (A. Gray) Cockerell is an infrequently collected species of Compositae known from a few localities in Coahuila and Nuevo León, Mexico, and in Brewster County, Texas (Turner 2000). The species is an acaulescent perennial only 3.5–10 cm high, with pinnately lobed leaves (Figs. 1, 2) and 1–several peduncles, each with a solitary, yellow-flowered, radiate head (Figs. 3, 4). The species is superficially similar to the Mexican *Gaillardia comosa* A. Gray (Turner 2000; Turner & Watson 2007); in Brewster County it bears some resemblance to stunted plants of *G. pinnatifida* Torr.

A recent collection of *Plateilema palmeri* provided a precise locality in Mexico, description of a specific habitat, and resulted in a first chromosome count for the species. In previous references label data and resulting habitat descriptions were scant, such as "limestone soils" (Strother 2006) and "ls. plains, grassy, subsaline drainages" (Henrickson & Johnston 1997). At the time of the publication of the Manual of Vascular Plants of Texas (Correll & Johnston 1970) *Plateilema* was not known to occur in the USA (Turner 2000). The label data of the new collection, which was made from a site discovered by George Hinton, are reproduced here in entirety:

> **MEXICO. Coahuila. Mpio. de Saltillo:** ca. 50 m from Nuevo León boundary on road from San Rafael de Galeana to La Carbonera, ca. 30 air km SW of San Rafael de Galeana, 4.8 road km S of La Hediondilla, 0.3 km S of jct of road to San Jose del Alamito; 24º 53' 35.4", 100º 44' 22.4" (WSG84), elev. 1870 m, flat calcareous silty clay bolson plains, at edge of abandoned agricultural area, near patches of *Larrea-Flourensia- Koeberlinia-Opuntia* scrub, plain with abundant annual vegetation of *Thymophylla, Heliopsis, Astragalus, Peganum, Allionia, Lepidium*, etc., said to be a "dust bowl" in 2012; *Plateilema* in more open areas, sometimes on barren silt-clay, few *Plateilema* in early fruit, some in flower, many vegetative, rays pale yellow, lightly blushed with apricot, striped maroon abaxially; 12 Jul 2013, *R. Spellenberg, W. Anderson, G. Hinton 14560* (NMC, MEXU, SRSC, UC).

Figures 1-4. *Plateilema palmeri* from collection *14560*. Fig. 1, cluster of plants on drying clay (larger plants ca. 9 cm diam.); Fig. 2, plant habit; Figs. 3 and 4, view of capitulum (diam. ca. 25 mm

Figure 5. Habitat of *Plateilema palmeri* at *14560* collection site, looking east from edge of Coahuila into Nuevo Leon, Mexico. Shrubs are mostly *Koeberlinia* and *Larrea*; yellow flowers are mostly *Heliopsis*.

Though said by George Hinton to be a "dust bowl" in 2012, devoid of most herbaceous vegetation, following the ample rains of 2013 the plain upon which *Plateilema* grew was green and densely vegetated with numerous herbaceous species covering the ground between patches of shrubs (Fig. 5). Even then, *Plateilema* was not especially common. It was occasionally locally frequent in small patches, with expanses of ground intervening between that and the next small patch of a few plants many meters away, but with no *Plateilema* found over much of the area. Among the herbaceous plants in the general area where *Plateilema* occurred were these: **Acanthaceae**: *Dyschoriste schiedeana* (Nees) Kuntze var. *decumbens* (A. Gray) Henrickson; **Asclepiadaceae**: *Asclepias emoryi* (Greene) Vail ex Small; **Asteraceae**: *Heliopsis parvifolia* A. Gray, *Hymenopappus hintoniorum* B.L. Turner, *Machaeranthera heterophylla* R.L. Hartm., *Psilostrophe gnaphalodes* DC., *Solidago velutina* DC., *Zinnia anomala* A. Gray; **Boraginaceae**: *Tiquilia canescens* (A. DC.) A.T. Richardson; **Brassicaceae**: *Lepidium alyssoides* A. Gray, *Physaria fendleri* (A. Gray) O'Kane & Al-Shehbaz ; **Convolvulaceae**: *Dichondra argentea* Humb. & Bonpl. ex Willd.; **Fabaceae**: *Astragalus parvus* Hemsl., *Hoffmannseggia glauca* (Ortega) Eifert, *Senna mensicola* (Irwin & Barneby) Irwin & Barneby; **Lamiaceae**: *Teucrium laciniatum* Torr.; **Malvaceae**: *Sida abutifolia* Mill., *Sphaeralcea hastulata* A. Gray; **Papaveraceae**: *Argemone echinata* G.B. Ownbey; **Poaceae**: *Buchloe dactyloides* (Nutt.) Engelm.; **Solanaceae**: *Bouchetia erecta* DC. ex Dunal; **Verbenaceae**: *Glandularia alejandrana* B.L. Turner; **Zygophyllaceae**: *Peganum mexicanum* A. Gray. Also present was *Berberis trifoliolata* Moric.

Buds from a plant in this population were fixed in cold 3 parts 100% ethanol and 1 part acetic acid. These buds yielded a meiotic chromosome number determined by the first author as **$2n = 13$ II**; meiotic configurations were observed at diakinesis, anaphase I, and anaphase II.

Only two collections of *Plateilema palmeri* are known from the USA, in Brewster County, Texas, both made on the same day by Henry T. Fletcher in 1929. Fletcher was a lifetime rancher, who was manager/partner of the historic 02 Ranch from 1909-1936, and he also exhibited the "style of a Renaissance man" (Keller 2005), among other things assembling a significant plant collection (SRSC), compiling a vegetation survey (Fletcher 1928), studying archeological sites and fossils, publishing articles in state and regional journals and newspapers of the time, and serving on various community/professional boards. Much of the 02 Ranch lies in a ca. 40 km^2 desertic mountain basin known as Green Valley, ca. 50-70 road km south of Alpine. This valley is crossed by Texas Hwy 118 and is distinctively different from some surrounding areas by its topography and vegetation, where water stands for some period after heavy rains. Vegetatively Green Valley is characterized by Chihuahuan Desert scrub, including *Larrea, Flourensia, Prosopis,* and *Opuntia*, and various grasses including *Hilaria mutica* (Buckley) Benth. and *Sporobolus airoides* (Torr.) Torr. Both Fletcher collections of *P. palmeri* (Turner 2000) were from calcareous soils on private land in southeastern parts of Green Valley: one locality was at the Schuler mail box (no longer present) near a ranch gate ca. 70 km south of Alpine, on the east side of the highway (*H.T. Fletcher 219*, 10 Apr 1929; SRSC); the other was from along Chalk Draw, Schuler ranch (*H.T. Fletcher 884*, 10 Apr 1929; SRSC), a site probably 5-10 km east of Hwy 118 from the old Schuler mail box, at the southeast periphery of the 02 Ranch; the Schuler ranch is no longer operating. Turner discussed the incongruity of the Fletcher collection numbers and date. If *P. palmeri* is extant in Brewster County, we suspect that it will flower in the summer, as it does in Mexico. We surmise that it would require an exceptional year for *Plateilema* to appear, and even then plants might be scarce, highly scattered, and because of their small stature, very difficult to spot among other vegetation.

Initial molecular phylogenetic studies have placed the monotypic *Plateilema* ($x = 13$) in the monotypic subtribe Plateileminae of tribe Helenieae (Baldwin & Wessa 2000; Baldwin 2009). The chromosome number of *P. palmeri* supports distinction from Gaillardinae and Tetraneurinae, where

base numbers range from $x = 15$ to $x = 19$, although $2n = 13$ II (hypothetically through dysploid reduction) is known for several species of *Helenium* ($x = 17$; Bierner 2006), subtribe Gaillardinae.

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